use of RTB after adjuvant breast radiotherapy was 38% in Era 1, 29% in Era 2 and 76% in Era 3 ($p < 0.001$). Ten-year LRFS was 85.3% in Era 1, 93.9% in Era 2 and 91.9% in Era 3. On MVA there was a significant decrease in relapse going from Era 1 (pre-HT, pre-boost) to Era 2 (HT, no boost) (HR 2.2, $p = 0.03$), but no change in relapse from Era 2 (HT, no boost) to Era 3 (HT and boost) (HR 1.0, $p = 0.97$). For LRFS across all three eras, there was no significant difference for patients that received a boost (92.9%) and those that did not (88.6%, $p = 0.31$) but there was a significant improvement for ER-positive patients that received HT (91.8% versus 81.6%, $p = 0.01$).
Conclusions: This study showed that new breast cancer therapies were adopted swiftly in response to new clinical practice guidelines. The introduction of HT was associated with an 8.6% improvement in ten-year LRFS. However, for a population of patients that was routinely prescribed HT, no improvement in LRFS was observed with the addition of routine RTB. RTB causes toxicity and offers no survival benefit; its routine use should be re-evaluated in the HT era.

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DOES DEEP INSPIRATION BREATH HOLD (DIBH) PRODUCE A CLINICALLY MEANINGFUL REDUCTION IN IPSILATERAL LUNG DOSE DURING LOCOREGIONAL RADIATION THERAPY FOR WOMEN WITH RIGHT-SIDED BREAST CANCER?
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Purpose: To determine whether DIBH produced a clinically meaningful reduction in pulmonary dose in comparison to free breathing (FB) during adjuvant locoregional radiation (RT) for right-sided breast cancer.
Methods and Materials: Thirty women with Stages 0-I left-sided breast cancer and who had both DIBH and FB CT scans as part of standard care were included. The right-sided IMC nodes were contoured according to ESTRO guidelines on DIBH and FB scans, with care taken to ensure comparability between scans. A four-field, modified-wide tangent RT plan was developed on each scan to include the right breast and full regional nodes, including a minimum dose of 80% to the IMC volume. The junction between the supraclavicular and tangent fields was at the inferior extent of the ossified medial clavicle. Treatment plans were calculated in Eclipse using the Acuros algorithm version 11. FB and DIBH plan metrics were compared using Wilcoxon-signed rank testing.
Results: IMC coverage was equivalent between DIBH and FB plans; V80 was 100% on both plans and D100 was 39.2 and 39.5 Gy for DIBH and FB, respectively. Twenty-one patients (70%) had ≥ 5% reduction in ipsilateral lung V20 with DIBH compared to FB. The average ipsilateral lung V20 decreased by 7.8% (range: 0 to 20%; $p < 0.001$) and the mean lung dose decreased by 3.4 Gy with DIBH (range: -0.2 to 9.1; $p < 0.001$). The right lung absolute V20 Gy gain from DIBH was larger among 15 patients with the highest V20 compared to 15 patients with the lowest V20 on FB (10.1% versus 5.6% respectively; $p = 0.01$). There was a mean reduction of 42.3 cc (range: 0 to 178.9; $p < 0.001$) in the volume of liver receiving 50% of the prescription dose. The differences in mean heart doses were statistically significant, but not likely clinically significant: MHD was 0.88 Gy (range: 0.67 to 1.27) and 1.00 Gy (range: 0.75 to 1.48) ($p < 0.001$) for DIBH and FB, respectively.
Conclusions: DIBH reduced mean ipsilateral lung V20 by 7.8% and mean lung dose by 3.4 Gy. For some patients, the volume of liver receiving ≥ 25 Gy can also be reduced with DIBH. DIBH should be available as a treatment strategy to reduce right lung V20 without compromising IMC or supraclavicular nodal coverage for patients with right-sided breast cancer during locoregional RT. This strategy can be advantageous in cases where the ipsilateral V20 on FB approaches 30%, a value that prompts many radiation oncologists to exclude IMCs from the RT volume.

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LOCAL CONTROL IN YOUNG WOMEN WITH EARLY-STAGE BREAST CANCER TREATED WITH HYPOFRACTIONATED WHOLE BREAST RADIOTHERAPY
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Purpose: Randomized clinical trials have shown equivalent local control for patients with early-stage breast cancer (BC) treated with conventional fractionation (CF) or hypofractionated (HF) adjuvant whole breast radiotherapy (WBRT). However, women less than 50 years of age have been underrepresented in these trials, and controversy still remains in relation to optimal fractionation schedule in this patient group. Our institutional policy allows for both schedules, therefore we compared local control in young women following breast-conserving surgery (BCS), and identified factors associated with recommendation of CF or HF schedule.
Methods and Materials: Two hundred and seventy-one women under 50 years of age with early-stage invasive BC (pT1-T2, pN0) treated from September 2009 to December 2013 were identified from an institutional database. BCS was followed by adjuvant CF (50 Gy in 25 fractions) or HF (40 or 42.4 Gy in 16 fractions) WBRT, followed by a boost to the tumour bed of 10-16 Gy in in 5-8 fractions. Data on tumour characteristics and adjuvant systemic therapies were collected. Length of follow up was calculated from the completion date of radiotherapy (RT) to the date of most recent imaging or clinical review in which disease status was recorded.
Results: Two hundred and twenty-seven (83.8%) patients were treated with HF and 44 (16.2%) with CF WBRT. Median follow up was 2.9 years (range 0-5.8 years) and median age was 42.8 years (range 19-49 years). Most patients had invasive ductal carcinoma (94%), unifocal (86%), Grade 1 or 2 (65%) and ER positive (88%) disease, of which 81% received adjuvant endocrine therapy. Lymphovascular invasion was associated in 16%, 54% received adjuvant systemic chemotherapy, 14% had HER2-positive disease and 8.5% of cases were triple negative (TN). Local control was achieved in 225 (99.1%) and 43 (97.7%) patients in the HF and CF groups, respectively. The mean age (± standard deviation) of patients receiving HF was 43.5 ± 4.5 years, and 39.3 ± 7.5 years for the CF group ($p < 0.01$). On univariate analysis, age greater than 40 years was associated with a higher likelihood of receiving HF WBRT (OR = 2.52, 95% CI 1.32-4.87), and patients with TN disease were 67% more likely to receive CF WBRT (OR = 0.33, 95% CI 0.13-0.87). No other differences were identified between the CF and HF groups, including receipt of systemic therapies.
Conclusions: Young women with early-stage BC treated with HF WBRT following BCS obtained excellent local control that was comparable to CF WBRT. At our institution, HF was more likely to be recommended for women over 40 years of age or for non-TN BC in this patient population. HF WBRT shortens total treatment time, is more convenient for patients and may be considered for women less than 50 years of age.

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POPULATION-BASED ASSESSMENT OF RELATIONSHIP BETWEEN VOLUME OF PRACTICE AND OUTCOMES IN HEAD AND NECK CANCER PATIENTS
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Purpose: Recent literature has suggested that higher volumes of practice are associated with better survival outcomes for head and neck cancer (HNC) patients. Some limitations in these studies, however, include looking at the volume of practice on a cancer centre level, not a provider level, and not controlling for rurality of patient residence. The primary objective of this study was to evaluate the effect of treatment centre on the overall survival (OS) and cancer-specific survival (CSS) of HNC patients